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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.   | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 10/656,879  | 09/08/2003  | Hideki Hatano        | Q77351                | 8083             |
| 23373   | 7590        | 04/29/2004           | EXAMINER              |                  |
| SUGHRUE MION, PLLC<br>2100 PENNSYLVANIA AVENUE, N.W.<br>SUITE 800<br>WASHINGTON, DC 20037 |             |                      | BOUTSIKARIS, LEONIDAS |                  |
|   |             |                      | ART UNIT              | PAPER NUMBER     |
|   |             |                      | 2872                  |                  |

DATE MAILED: 04/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|  |                                      |                                      |  |
|--|--------------------------------------|--------------------------------------|--|
| <p align="center"><b>Office Action Summary</b></p> | <b>Application No.</b><br>10/656,879 | <b>Applicant(s)</b><br>HATANO ET AL. |  |
|  | <b>Examiner</b><br>Leo Boutsikaris   | <b>Art Unit</b><br>2872              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/3/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

The abstract of the disclosure is objected to because it contains the term “comprises” in line 6. Correction is required. See MPEP § 608.01(b).

### ***Claim Objections***

Claim 2 is objected to because of the following informalities:

Claim 2 cites “at the deeper energy position” in lines 4 and 7, which lacks antecedent basis. It is suggested that the above phrase is replaced with “at a deeper energy position”.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 1-2, 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Galambos (Crystal Growth article).

Regarding claim 1, Galambos discloses a single lithium niobate crystal that is used for holographic recording, wherein the crystal has stoichiometric composition and includes Mn as an impurity at a level of 37.2 ppm or 43.7 ppm (see table 2, and section 3 in p. 230).

Regarding claim 4, Galambos discloses that two-photon recording or gated recording can be performed, wherein the crystal is first illuminated by blue gating light and subsequently holograms are recorded using light with longer wavelength i.e., red. (section 4).

Regarding claim 2, Galambos teaches that in this type of recording, extrinsic dopants, e.g., Mn, play essentially the same role as deep bipolarons, resulting in an energy diagram depicted in Fig. 3 (first 5 lines of section 4), where a first energy level exists at a deeper energy position than a second energy level, and a third energy level exists at a deeper energy position than the second energy level.

Claims 1, 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Phillips (US 3,933,504).

Regarding claim 1, Phillips discloses a single lithium niobate crystal that is used for holographic recording, wherein the crystal has stoichiometric composition and includes Mn as an impurity at a level of 0.001 mol percent i.e., 10 ppm (see lines 29-52, col. 2).

Regarding claim 4, Phillips discloses that two-photon recording or gated recording can be performed, wherein the crystal is first illuminated by gating light of about 350-400 nm and

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subsequently holograms are recorded using light with longer wavelength e.g., 488 nm (lines 58-68, col. 2, and lines 11-13, col. 4).

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 6 of U.S. Patent No. 6,373,806. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 6 discloses a stoichiometric lithium niobate crystal (when molar fraction of the two constituents is 0.5, see range in claim 2), which includes Mn by an amount ranging from 1 weight ppm to 1,000 weight ppm.

### ***Allowable Subject Matter***

Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and the double patenting rejection is overcome.

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Claim 3 is allowable over the prior art of record for at least the reason that, even though the prior art discloses Mn-doped stoichiometric lithium niobate crystals, the prior art fails to teach or reasonably suggest, an Mn-doped stoichiometric lithium niobate crystal having the product  $\alpha_g L$  have a value in the range 0.5 to 2.9, as set forth by the claimed combination.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo Boutsikaris, Ph.D.  
Patent Examiner, AU 2872  
April 23, 2004

